CDMA processing means for processing and decoding said numerical values using a first and second code to obtain demodulated data signals received from said first and second base [station transmitters] stations, said demodulated data signals including information relating to signal quality of said received signals;

encoding means [to encode] for encoding said information into a data message; and

CDMA transmitting means [to transmit] for transmitting said data message to at least one of said first and second base stations.

15. (Amended) A mobile station according to claim 14, wherein said first code includes combination of a first base station code for identifying said first base station with a first access code and said second code includes combination of a second base station code for identifying said second base station with a second access code.

REMARKS

Reconsideration and allowance of the above-identified application are respectfully requested. Claims 1-15 are currently pending.

Applicants note with appreciation the Examiner's consideration of and making of record the documents submitted

with the Information Disclosure Statement filed on February 8, 1993. Applicants also appreciate the Examiner's indication that claims 10-12 would be allowable if amended to overcome the rejection under 35 U.S.C. § 112, second paragraph.

Claims 1-15 were rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter set forth therein. By the foregoing amendments, Applicants have addressed each of the specific concerns raised by the Examiner in the Office Action, with the exception that certain of the codes set forth in claims 3 and 8-12 have not been further clarified since it is believed that the adjectives which precede the word "code" are sufficiently descriptive of the entities which are related to those codes, i.e., a "traffic channel code" is related to a traffic channel.

Accordingly, it is respectfully requested that the rejection of claims 1-15 under 35 U.S.C. § 112, second paragraph, be reconsidered and withdrawn.

Claims 1-9 and 14-15 were rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Schilling (U.S. Patent No. 5,179,571). Prior to discussing this ground of rejection, a brief summary of Applicants' novel radio communications systems and methods is provided to highlight some of the advantageous characteristics thereof.

According to exemplary embodiments of the present invention, in radiocommunication systems which operate using

coded transmissions, a connection between a first base station and a mobile station can be seamlessly transferred (soft handover) to a second base station, which will then continue the connection with the mobile station. This seamless transfer is effected by having the second base station begin to transmit the same information to the mobile station, on the same or a different frequency and using a different code than the first base station, while the first base station continues to transmit. In addition to providing seamless communication transfer, the approximately simultaneous reception of two signals having the same information (macrodiversity) according to exemplary embodiments of the present invention also provides the opportunity for improved reception quality by combining or selecting symbols from each of the signals.

By way of marked contrast, the spread spectrum cellular handoff apparatus and method disclosed by Schilling relate to what is commonly called a hard handover, whereby communication between a first base station and a mobile station is transferred to a second base station without the overlap in transmissions found in soft handover or macrodiversity. Schilling discloses that the mobile assists in the hard handover (mobile-assisted handover) by receiving a plurality of generic chip code signals each from a prospective base station and analyzing these generic chip code signals to determine which one of the base stations should continue communication with the mobile station.

Thus, whereas systems and methods according to exemplary embodiments of the present invention transmit data-carrying signals from plural base stations having the same information thereon **after** determining that a communication transfer will occur, the Schilling system teaches transmitting generic (as opposed to message) signals from plural base stations to a mobile station only **before** a transfer of communication occurs.

Accordingly, with respect to Applicants' claim 1-6 combinations, Schilling fails to teach or suggest, among other steps, after receiving the transfer indication, transmitting a signal on the first frequency from the second base station to the mobile station using a waveform encoded with a second code and receiving at the mobile station the signals transmitted on the first frequency from the first and second base stations (claim 1), or after receiving said transfer indication, transmitting a signal on the second frequency from the second base station to the mobile station using a waveform encoded with the second code (claims 2-6). Again, note that the system of Schilling discloses receiving the generic chip code signals only prior to the decision to handoff.

Applicants' claim 3-6 combinations all ultimately depend from claim 1 and are, therefore, also allowable over Schilling for the reasons discussed above with respect thereto. However, these claims are also not taught or suggested by Schilling for additional reasons as set forth, below.

Applicants' claim 3 combination includes, among other features, that the first code includes a combination of a base station code and an access code. By way of marked contrast, the Schilling patent discloses first transmitting generic codes prior to handoff and then transmitting message codes after handoff. Thus, Schilling teaches away from any combination of codes as claimed.

Despite this distinction, it is alleged in the Office Action, that it would have been obvious to use the claimed combination of codes in the apparatus of Schilling to aid in identifying the base stations and select a base station with a least traffic load. Neither of these alleged motivating factors are found in Schilling nor are they identified as being taught by other documents. Accordingly, Applicants respectfully submit that since the only teaching of this feature is found in their specification, such a modification is likely the product of impermissible hindsight reliance thereon.

Applicants' claim 4 combination includes, among other features, the step of error correcting the demodulated signals. Not only does Schilling not disclose error correction, but Schilling also fails to provide plural demodulated signals. Thus, the statement in the Office Action that because error coding per se is well known in the art that it would have been obvious to provide such a feature to

Schilling is not supported and, even if true, would not have resulted in Applicants' claim 4 combination.

Similarly, Applicants' claim 5 and 6 combinations include, among other features, selecting or combining, respectively, symbols from the first and second demodultated signals. Again, since the generic chip code signals of Schilling are not modulated with data and not subsequently demodulated, they cannot be used to perform diversity combination or selection.

For at least the foregoing reasons it is respectfully requested that the rejection of Applicants' claim 1-6 combinations under 35 U.S.C. § 103 over Schilling be reconsidered and withdrawn.

With respect to Applicants' claimed 7-9 combinations, Schilling fails to teach or suggest, among other features, the steps of decoding, at the mobile station, signals received simultaneously from the at least two base stations on a common frequency, each signal using a different code and modulated with the same data related to said communication, and quantifying their respective signal strengths, and processing said indicated signal strengths in the network controller and selecting one of the at least two base stations to maintain communication with the mobile station. In this regard, again note that the system of Schilling is designed to evaluate the generic chip signals which are not modulated with data related to the communication

and to then handover communication based on that evaluation rather than maintain communication with a mobile station from one of plural base stations which are already transmitting data thereto.

Applicants' claim 8 and 9 combinations relate to the codes used to encode the transmitted signals. As discussed above, Schilling which discloses first transmitting a generic chip code signal, and, after handoff, transmitting a message chip code signal, does not teach or suggest the codes found in these claims.

For at least the foregoing reasons, it is respectfully requested that the rejection of Applicants' claimed 7-9 combinations under 35 U.S.C. § 103 over Schilling be reconsidered and withdrawn.

Applicants' claim 14 and 15 combinations include, among other features, CDMA processing means which obtain demodulated data signals received from the first and second base stations. These demodulated data signals, including information related to signal quality of the received signals. Again, as mentioned several times supra, the signals relied upon in the Schilling patent, i.e., the generic chip code signals, are unmodulated sequences which do not carry any data modulation. This is the case because the system of Schilling is not concerned with macrodiversity or soft handover.

Further, Applicants note that the Examiner has correctly indicated that three of the clauses of Applicants'

claimed 14 combination are completely missing from the Schilling patent. Despite lacking all of these elements, among others, these differences are bridged tersely in one phrase saying "it would have been obvious to one of ordinary skill in the art to have provided these elements in order to have the mobile station completely implemented". Applicants respectfully submit that it is improper to note myriad differences between an applied document and a claimed combination, and simply attribute such differences to a "lack of complete implementation" on the part of the applied document. Applicants respectfully request that if this ground of rejection is maintained in a future communication, the Examiner present documents showing that these elements were known in the prior art and establishing that a motivation would have existed for modifying the Schilling document to provide these elements as set forth in Applicants' claimed combinations.

For at least the foregoing reasons, it is respectfully requested that the rejection of claims 14 and 15 under 35 U.S.C. § 103 over Schilling be reconsidered and withdrawn. All of the objections and rejections raised in the Office Action having been addressed, it is respectfully submitted that the present application is in condition for allowance and a notice to that effect is earnestly solicited.

Should the Examiner have any questions regarding this response, or the application in general, he is invited to contact the undersigned at (703) 838-6642.

Respectfully submitted,

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